

## CLAIMS

What is claimed is:

1. A method of increasing network processing node interconnect capacity and reducing maximum hop count in a scalable multidimensional ring network by creating additional rings comprising the steps of:
  - (a) selecting a node identification algorithm;
  - (b) selecting an initial network processing node in the scalable multidimensional ring network as a first node in a new ring;
  - (c) applying the node identification algorithm to the selected node to calculate a subsequent node in the new ring;
  - (d) making the calculated node the selected node;
  - (e) terminating the applying step when the selected node is the initial network processing node, thereby creating the new ring; and
  - (f) terminating Step (b) when all nodes in the scalable multidimensional ring network have been processed according to steps (b) through (e), thereby creating all new rings in the scalable multidimensional ring network.
2. The method of Claim 1 wherein the node identification algorithm identifies the subsequent network processing node based upon being one hop away bi-directionally in each of the X, Y and Z dimensions.
- 20 3. The method of Claim 1 wherein the node identification algorithm identifies the subsequent network processing node based upon characteristics of the network processing node comprising:  
network processing node type, network cabling type and distance, and physical location of the network processing node.

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4. An apparatus for increasing network processing node interconnect capacity and reducing maximum hop count in a scalable multidimensional ring network by creating additional rings comprising a processor, a memory and a network interface, the processor configured for:

5           selecting a node identification algorithm;

              selecting an initial network processing node in the scalable multidimensional ring network as a first node in a new ring;

              applying the node identification algorithm to the selected node to calculate a subsequent node in the new ring;

10          making the calculated node the selected node;

              terminating applying the node identification algorithm to the selected node to calculate a subsequent node in the new ring when the selected node is the initial network processing node, thereby creating the new ring; and

              terminating selecting an initial network processing node in the scalable multidimensional ring network as a first node in a new ring when all nodes in the scalable multidimensional ring network has been processed, thereby creating all new rings in the scalable multidimensional ring network.

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5. The apparatus of Claim 4 wherein the node identification algorithm identifies the subsequent network processing node based upon being one hop away bi-directionally in each of the X, Y and Z dimensions.

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6. The apparatus of Claim 4 wherein the node identification algorithm identifies the subsequent network processing node based upon characteristics of the network processing node comprising:

              network processing node type, network cabling type and distance, and

25          physical location of the network processing node.

7. An apparatus for increasing network processing node interconnect capacity and reducing maximum hop count in a scalable multidimensional ring network by creating additional rings comprising:

- 5      a means for selecting a node identification algorithm;
- a means for selecting an initial network processing node in the scalable multidimensional ring network as a first node in a new ring;
- a means for applying the node identification algorithm to the selected node to calculate a subsequent node in the new ring;
- a means for making the calculated node the selected node;
- 10     a means for terminating applying the node identification algorithm to the selected node to calculate a subsequent node in the new ring when the selected node is the initial network processing node, thereby creating the new ring; and
- 15     a means for terminating selecting an initial network processing node in the scalable multidimensional ring network as a first node in a new ring when all nodes in the scalable multidimensional ring network has been processed, thereby creating all new rings in the scalable multidimensional ring network.

8. A computer program product comprising:

- 20     a computer usable medium for increasing network processing node interconnect capacity and reducing maximum hop count in a scalable multidimensional ring network by creating additional rings; and
- a set of computer program instructions embodied on the computer usable medium, including instructions to:
- select a node identification algorithm;
- select an initial network processing node in the scalable multidimensional ring network as a first node in a new ring;
- 25     apply the node identification algorithm to the selected node to calculate a subsequent node in the new ring;
- make the calculated node the selected node;

terminate the apply the node identification algorithm instructions when the selected node is the initial network processing node, thereby creating the new ring; and

5 terminate the select an initial network processing node instructions when all nodes in the scalable multidimensional ring network has been processed, thereby creating all new rings in the scalable multidimensional ring network.

9. A computer data signal embodied in a carrier wave comprising a code segment for increasing network processing node interconnect capacity and reducing maximum hop count in a scalable multidimensional ring network by creating  
10 additional rings; and

a set of computer program instructions embodied in the code segment, including instructions to:

select a node identification algorithm;

15 select an initial network processing node in the scalable multidimensional ring network as a first node in a new ring;

apply the node identification algorithm to the selected node to calculate a subsequent node in the new ring;

make the calculated node the selected node;

20 terminate the apply the node identification algorithm instructions when the selected node is the initial network processing node, thereby creating the new ring; and

terminate the select an initial network processing node instructions when all nodes in the scalable multidimensional ring network has been processed, thereby creating all new rings in the scalable multidimensional ring network.